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Measuring Exposure to Racism: Development and Validation of a Race-Related Stressor Scale (RRSS) for Asian American Vietnam Veterans

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This article describes the development and validation of the Race-Related Stressor Scale (RRSS), a questionnaire that assesses exposure to race-related stressors in the military and war zone. Validated on a sample of 300 Asian American Vietnam veterans, the RRSS has high internal consistency and adequate temporal stability. Hierarchical regression analyses revealed that exposure to race-related stressors accounted for a significant proportion of the variance in posttraumatic stress disorder (PTSD) symptoms and general psychiatric symptoms, over and above (by 20% and 19%, respectively) that accounted for by combat exposure and military rank. The RRSS appears to be a psychometrically sound measure of exposure to race-related stressors for this population. Race-related stressors as measured by the RRSS appear to contribute uniquely and substantially to PTSD symptoms and generalized psychiatric distress.

There is national interest in the United States in documenting the prevalence of race-hate crimes.[1] This reflects an emerging recognition of the social importance of establishing objective measures of the prevalence of negative race-related events as a critical step in addressing the problem of racism. Although there is an extensive research literature on stressful life events (see B. P. Dohrenwend, 1998; B. S. Dohrenwend & Dohrenwend, 1974), few conceptual models depict exposure to racism as a stressful life event (see Clark, Anderson, Clark, & Williams, 1999). And although there has been some research on perceived racism as a daily hassle or chronic stressor (see Utsey & Ponterotto, 1996), there has been no investigation of perceived racism as a potential traumatic stressor and no study of posttraumatic stress disorder (PTSD) symptoms associated with race-related events. Klonoff,

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[1] For example, the U.S. Congress passed the Hate Crimes Statistics Act in 1990, which for the first time enabled the Federal Bureau of Investigation to collect information about race-hate crimes.

Landrine, and Ullman (1999) found that perceived racial discrimination contributed significantly to psychiatric symptoms among African Americans. However, beyond this, empirical studies on the mental health consequences of perceived racism have been few in number and limited by the near absence of valid and reliable measures of perceived racial discrimination and prejudice (Outlaw, 1993; see also Landrine & Klonoff, 1996; Thompson, Neville, Weathers, Poston, & Atkinson, 1990; Utsey & Ponterotto, 1996). There is a need for further investigation of the effects of perceived racial discrimination on samples other than African Americans and a need to evaluate the construct with other measures of symptoms (Klonoff et al., 1999). The purpose of this article is to present the development of a self-report Race-Related Stressor Scale (RRSS) designed to measure race-related stressors for one minority group—Asian American veterans who served in the Vietnam War—and to explore the relationship of race-related stressor exposure to PTSD and general psychiatric distress.

Military Race-Related Stressors and Race Differences in PTSD Among Veterans

There is suggestive evidence that the postmilitary adjustment of minority combat veterans was affected by exposure to race-related experiences. National studies of Vietnam combat veterans consistently found higher prevalence rates of PTSD and other readjustment problems among African American and Hispanic veterans than among White veterans (Egendorf, Kadushin, Laufer, Rothbart, & Sloan, 1981; Kulka et al., 1990; Penk et al., 1989). The higher prevalence of PTSD and other readjustment problems among racial and ethnic minority Vietnam veterans is only partially accounted for by exposure to traditional combat exposure and premilitary risk factors, such as presence of a family history of mental illness and exposure to child abuse (Schlenger et al., 1992). The missing link in understanding the factors underlying racial differences in the postwar adaptation of Vietnam veterans may be the impact that minority status and exposure to race prejudice played among minorities who served in that theater (Penk & Allen, 1991). However, studies of Vietnam veterans have not examined the potential role of exposure to race-related events in the military service as a distinct contributing factor to race differences in symptoms of PTSD.

Hamada, Chemtob, Sautner, and Sato (1987) were the first to highlight the Asian American veteran's experiences in the Vietnam War in terms of the impact of ethnicity and ethnic identity on clinical vulnerability to PTSD and psychiatric symptomatology. Additional case studies (Kiang, 1991; Loo, 1994, 1998; Loo, Singh, Scurfield, & Kilauano, 1998) and survey findings (Matsuoka, Hamada, Kilauano, & Coalson, 1992) documenting race-related stressors experienced by Asian American Vietnam veterans based on their racial or physical similarity to the enemy suggest a need for an empirical measure of exposure to military and war-zone race-related events for this population. The purpose of the present study was to develop such a scale because there is no measure that operationalizes the military and war-zone race-related experiences of minority veterans.

In addition, we reasoned that validating the effects of exposure to race-related stressors on PTSD would be most effective if it could be demonstrated that the effects of exposure to race-related stressors could be discriminated from the effects of a well-recognized stressor event that had already been found to significantly predict psychiatric disorders and PTSD, namely, combat exposure. Measuring both combat exposure and exposure to race-related stressors among this population would allow us to assess the separate association between each of these stressors and psychiatric distress and PTSD symptoms. If exposure to race-related stressors does not add predictive power in assessing mental health outcomes—over and above the effects of traditional variables—this would tend to argue against its construct validity. Finally, we reasoned that the study of Asian American Vietnam veterans was a critical initial methodological step toward the construction of scales that measure exposure to race-related stressors more generally.

A Conceptual Framework for Examining Race-Related Stress

Clark et al. (1999) proposed a biopsychosocial model of racism as a stressor for African Americans, by which the perception of an environmental stimulus as racist results in psychological and physiological stress responses, and that over time, these stress responses influence health outcomes. The model of race-related stressors for Asian American Vietnam veterans proposed by Loo (1994) and Loo et al. (1998) suggested that single race-related adverse events, for example, being threatened with death or injury because of one's ethnicity, can qualify as traumatic events as described in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV*) definition of PTSD (American Psychiatric Association, 1994). To qualify under the *DSM–IV* Criteria A for PTSD, the individual must have been exposed to an event in which he or she believed that death or injury could result from the experience and the event must have provoked reactions of intense fear, helplessness, or horror. Loo's model also proposes that the stressful effects of exposure to combat and racism could be additive and that cumulative racism can be experienced as traumatic.

Drawing partly on previous works (Hamada et al., 1987; Kiang, 1991), Loo's model specifies various categories or domains of race-related stressors experienced by Asian American veterans in the Vietnam War, including (a) racial stigmatization and exclusion by fellow comrades in arms, which may have reduced the soldier's sense of belonging and increased the threat of death; (b) bicultural conflict arising from being forced through military conditioning to acquire a behavioral repertoire that had an emotional–motivational component ("hate Asians, kill Asians"), a language-cognitive labeling component (referring to Asians as "gooks"), and a sensorimotor response pattern component (physiological arousal in which killing is associated with Asians) that contradicted the veteran's premilitary repertoire related to Asians or being Asian; (c) racial or cultural identification with the Vietnamese culture, setting, or people, which made dehumanization of the enemy (a standard component of combat training) more difficult; and (d) life-threatening experiences of being mistaken for the enemy, which could lead to cumulative hypervigilance and physiological arousal.

Three categories of race-related stressors, drawn largely from the previously described model of race-related stressors, were operationally defined and considered main domains of war-zone race-related stressors for Asian American Vietnam veterans for this study. The first category is exposure to *racial prejudice and stigmatization*, defined as direct, personal experiences in which one perceives that one has been discriminated against or excluded

by virtue of race, or subjected to denigration, harassment, dehumanization, or stigmatization on the basis of race. This definition follows Myers's (1993) definition of *racial prejudice* as an unjustifiable and prejudged negative attitude toward a racial group that can lead to unjustifiable negative, differential treatment of members of a minority group; Goffman's (1963) definition of *racial stigmatization* as discrediting attributions to people of a certain racial group based on negative stereotypes of that group; Crocker and Major's (1989) definition of *stigmatization* as a social category about which others hold negative attitudes, stereotypes, and beliefs, wherein the objects of stigmatization, owing to the conspicuousness of racial features, may be made targets of prejudice or discrimination; and Pinel's (1999) construct of stigma consciousness. The importance of a category of stressors on racial prejudice and stigmatization is suggested by two sources of data: first, by case studies of Asian American and Chamorro (natives of Guam) Vietnam veterans who, because of their racial similarity to the enemy, were exposed to this category of race-related stressors in the military or war zone (Hamada et al., 1987; Kiang, 1991; Loo, 1994, 1998; Loo et al., 1998); and, second, by survey findings on Asian Pacific Islander Vietnam veterans (Matsuoka et al., 1992) that documented a high prevalence of race-related military experiences for this veteran population. Specifically, one fifth of Matsuoka et al.'s respondents reported that their physical characteristics were used to describe the enemy; one half reported they were mistaken for Vietnamese; and one half believed that their ethnicity affected how other military personnel treated them.

The second category of race-related stressors is *bicultural identification and conflict*, defined as the experience of identifying with the Vietnamese people or culture, which is proposed to conflict psychologically with military conditioning to dehumanize the enemy. This domain draws from a literature suggesting the existence of this phenomenon among Asian American Vietnam veterans (Crosscurrent Media, 1991; Hamada et al., 1987; Kiang, 1991; Lifton, 1973; Loo, 1994; Loo et al., 1998), as well as Vietnam veterans of African American ancestry and American Indian ancestry. It has been proposed that the common affinity between African Americans and Third World peoples was partly responsible for the postwar adjustment problems experienced by African American veterans, causing problems of guilt and rage over having injured or killed Vietnamese people and heightened ambivalence or conflict between service to country and injuring people perceived as very much like themselves (Laufer, Gallops, & Frey-Wouters, 1984; Parson, 1984a, 1984b, 1985b). Parson (1985a) used the term "gook identification" to describe an African American soldier's emotional identification to "the devalued, maligned, abused, and helpless aspects of the Vietnamese people" (p. 182), which the soldier likened to the sociopolitical history of slavery, racism, exclusion, and poverty of African Americans in the United States. Similarly, Holm (1992a, 1992b) and Johnson (1992) proposed that American Indians who served in the Vietnam War experienced psychological tension and ambivalence from associating the condition of the Vietnamese with that of their own people.

The third domain of race-related stressors is exposure to a *racist environment*, which is defined as having witnessed remarks or behaviors by American military personnel that denigrated, harassed, or dehumanized Asians. Exposure to a racist environment is distinguished from racial prejudice and stigmatization. Exposure to a racist environment involves perceived exposure to an anti-Asian environment but the absence of personal and direct racial discrimination or stigmatization of that individual. In contrast, racial prejudice and stigmatization involves the perception of personally and directly having been subjected to racial prejudice and racial stigmatization. Exposure to a racist environment is drawn from a literature describing the Vietnam War as a racial war, in which race critically affected the experiences of American troops (Leventman & Camacho, 1980; Terry, 1984). The "gook syndrome" and use of racially derogatory terms like "gook" (Leventman & Camacho, 1980) characterized a prevalent race prejudice against Asians, be they friend or foe (Eisenhart, 1975; Leventman & Camacho, 1980; Lifton, 1973; Shatan, 1978). "Antigook" conditioning was described as a normative part of the subculture of American troops in the Vietnam War (Lifton, 1973; Shatan, 1978), causing many American soldiers to view all Vietnamese, whether soldier or civilian, as the enemy. So profound was the contempt for the people of South Vietnam among some U.S. military personnel (Watson, 1969) that American soldiers felt compelled to adhere to the norm of the "gook syndrome" as part of their demonstrated loyalty to the war effort (Lifton, 1973).

We reasoned that the three proposed domains of race-related stressors would overlap but measure somewhat distinct phenomena. We borrowed from Blauner (1972), who defined the essential feature of racism as a pattern of relatedness in which individuals are socially and psychologically alienated from others, blocking possibilities of common identification. We reasoned that the resultant alienation might be reflected in experiences of racial prejudice and stigmatization as well as bicultural identification and conflict. We also proposed that this alienation might be particularly stressful given the importance of social inclusion in one's unit for survival in war (Chemtob, 1996). We suggested that being cut off from one's unit, physically or psychologically, is likely to increase the potential threat to life associated with war (one of the diagnostic features of PTSD, Criterion A). Fear of death from either fellow American soldiers or the enemy, which thus affords no place of safety, might be expected to precipitate a physiological state of continuous hypervigilance and arousal in some of these minority veterans. It was furthermore expected that, of the three proposed domains of race-related stressors, racial prejudice and stigmatization and a racist environment would overlap somewhat because subjection to racial prejudice and stigmatization would be expected to occur more frequently in environments in which prevalent racist attitudes toward Asians were present, whereas bicultural identification with the people or culture of Vietnam could conceivably be experienced in the absence of racial prejudice and stigmatization or a racist environment. The inclusion of exposure to a racist environment in a constructed scale on race-related stressors that measures the social environment is consistent with the notion that malevolent environments are not conducive to mental health.

The primary purpose of this research was to develop a scale to measure exposure to race-related stressors in the military and war zone among Asian American Vietnam veterans that would meet psychometric standards of reliability and validity. Accordingly, we expected this scale to have internal consistency, stability over time, and strong correlations with measures of PTSD and general psychiatric symptomatology, controlling for variables known to correlate with PTSD, such as combat exposure and military rank. Three studies were conducted over a 5-year period to (a) develop a questionnaire that would have content validity for exposure to

race-related stressors for the population of interest; (b) examine the internal consistency, factor structure, and construct validity of the questionnaire; and (c) examine the questionnaire's temporal stability.

Study 1

Overview

The purpose of Study 1 was to generate an initial item pool for the RRSS, refine the items, and pilot the item pool on a small group of volunteers.

Method

Item Generation and Refinement for RRSS

Four methods were used to suggest items for the RRSS: (a) a review of the literature on race-related stressors among minority Vietnam veterans (see Crosscurrent Media, 1991; Hamada et al., 1987; Holm, 1992a, 1992b; Johnson, 1992; Kiang, 1991; Laufer et al., 1984; Lifton, 1973; Loo, 1994, 1998; Loo et al., 1998; Matsuoka et al., 1992; Parson, 1984a, 1984b, 1985a, 1985b; Penk & Allen, 1991; Shatan, 1978), (b) clinical interviews with Asian American Vietnam veterans who had symptoms of PTSD associated with race-related events in the military, (c) focus groups, and (d) input from clinicians with experience treating war-related psychological problems among Asian American veterans. Item generation was also guided by the conceptual model of race-related stressors that encompassed the three dimensions: racial stigmatization and prejudice, bicultural identification and conflict, and exposure to a racist environment.

To address content validity, we included all relevant examples of race-related stressor experiences to approximate as completely as possible the universe of such experiences that the RRSS was intended to capture. Chalsa M. Loo constructed items from a content analysis of race-related experiences of Asian American Vietnam veterans that were described in the literature and reported by veterans in clinical interviews. Items were written for a 5-point Likert-type scale from 0 (*never*) to 4 (*very frequently*) such that high scale scores indicated stronger endorsement of exposure to negative race-related experiences (e.g., "How often, if ever, were you called a 'gook' in a hostile manner?"). A few items were written with response alternatives of "none" to "four or more times" in reference to events that were expected to be of rare occurrence but of severe impact even if experienced just once (e.g., "How often, if ever, were you physically assaulted by fellow Americans because you were mistaken for South Vietnamese or the enemy?"). Items were constructed without regard to trying to construct equal numbers of items for each dimension.

Focus groups were held at the Honolulu Veterans Affairs (VA) Center, Maui Vet Center, San Francisco Vet Center, and Guam Vet Center. Members of the focus groups included clinicians or counselors who had treated Asian American veterans for war-related psychological problems or were VA employees who were Asian American Vietnam veterans. Each focus group included a facilitator and from two to six other members. Each focus group spent 2 to 9 hr reviewing and discussing the preliminary pool of items (with attention to item congruence with what the scale was intended to measure and concurrence in meaning in regard to the three conceptual dimensions proposed), generating items that were not represented in the item pool (to assure the item pool was inclusive in capturing the full breadth of race-related stressor experiences for this population), and revising items for meaning, comprehension, and clarity. Specifically, focus group reviewers were asked the following: (a) "What do the questions mean to you?" (b) "Are the items phrased as clearly as possible?" (c) "Do the items measure what they are intended to measure in regard to the three conceptual dimensions proposed?" (d) "Are there other race-related experiences that Asian American veterans had in the military that are not covered by the current list of items?" (e) "Are the instructions clear and unbiased?" and (f) "Do any of the items compromise the validity of the instrument, that is, do any items seem biased or leading?" The item pool was also individually reviewed by other clinicians or counselors (Bill Kilauano, Roger Hamada, Sal Ueda, Rodney Torigoe, and Peter Kiang) who treated Asian American veterans for war-related psychological problems. Following these procedures, there was an initial pool of 94 items.

Based on the face content of the items, the pool of 94 items were sorted into one of the three dimensions: racial prejudice and stigmatization, bicultural identification and conflict, and racist environment. A total of 54 items were sorted into the racial prejudice and stigmatization domain, defined earlier. Examples of these items included "How often, if ever, were you pointed out as an example of what the enemy looked like?" and "How often, if ever, were you called a 'gook,' 'slope,' 'slant eyes,' 'Jap,' 'kamikaze,' 'Chink,' 'boy,' 'pineapple,' or 'coconut head' in a way that felt hostile or insulting?" A total of 29 items were sorted into the bicultural identification and conflict domain, defined earlier. Examples included "How often, if ever, could you identify with the people or culture of Vietnam?" and "How often, if ever, did a wounded or dead Vietnamese woman or child remind you of a family member, relative, or friend?" A total of 11 items were sorted into the racist environment domain, defined earlier. Examples included "How often, if ever, did you hear military personnel express hatred toward Asians?" and "How often, if ever, did military personnel treat Asians as inferior?"

Pilot Test

The pool of 94 items was pilot tested on 11 volunteer participants who varied by their Asian ethnic group, military branch of service, combat exposure, and treatment- or nontreatment-seeking status.

Results

Results of the pilot testing revealed the following: (a) a wide range of responses overall, suggesting good variability represented by the item pool; (b) within-subject variations in scores for each of the three dimensions; (c) higher mean scores among treatment seekers than nontreatment seekers; (d) consistency between clinical judgments and veteran responses to items sorted into the bicultural identification and conflict dimension; and (e) positive reactions by the veterans to the experience of taking the questionnaire (e.g., comments of appreciation for the opportunity to discuss experiences that they had never discussed with their case managers). In addition, each volunteer was interviewed following completion of the questionnaire to obtain feedback about item inclusiveness, clarity, and meaning.

Study 2

Overview

The objectives of Study 2 were to reduce items; conduct further item deletions on the basis of content validity, redundancy, distribution, item–total correlations, and factor analyses; examine the factorial structure of the pool of items that composed the preliminary version of the RRSS; and examine the construct validity of the RRSS by investigating the relationship between the RRSS and PTSD and general psychiatric symptoms, controlling for military rank and exposure to combat.

Method

Participants

The sample for Study 2 included 300 veterans of Asian American descent (including those of mixed race) who served in the U.S. Armed

Forces in the Vietnam theater between February 28, 1961 and May 7, 1975. Asian American veterans included individuals who identified themselves as Chinese, Filipino, Korean, Japanese, Okinawan, Chamorro, or Asian mixed race (e.g., mixed Asian, Asian/Hawaiian, Asian/Caucasian, Asian/Hawaiian/Caucasian, Asian/Chamorro, and Asian/other). Potential participants of mixed racial ancestry who did not identify with their Asian ancestry were not eligible for the study. The mean age of the sample was 55.07 years (SD = 6.53). The average education level of the sample was 14.18 years of schooling (SD = 2.74). Table 1 reports other demographic and service-related characteristics of the sample. The mean age of the sample when they first went to Vietnam was 23 years.

Sample Selection

Multiple sampling methods were used to select a sample with a wide range of demographic (e.g., income and employment history), military (e.g., rank and branch of service), and health status (e.g., treatment and nontreatment seekers) characteristics. Of the sample, 74% (n = 221) were obtained using a "snowball" approach to sampling, 13% (n = 40) were drawn from registries of veterans maintained by the Defense Manpower Data Center, and 13% (n = 39) were drawn from the Department of Veterans Affairs registries of treatment seekers.

The snowball sampling procedure used word-of-mouth recruitment efforts by staff at Vet Centers and specialized PTSD treatment programs and veterans service organizations, or recruitment by means of public media coverage and other study participants. This procedure was used to enhance geographical dispersion and ethnic diversity of the sample and to identify Chamorro and Asian Americans who did not have an Asian surname that could be recognized on the lists. The Defense Manpower Data Center lists were used to identify nontreatment seekers and officers. The Department of Veterans Affairs lists were used to identify users of medical and mental health services provided by the Veterans Administration. These lists were obtained from three different Medical and Regional Office Centers in California and Hawaii. The lists included names of Vietnam veterans who sought services for primary care, substance abuse, PTSD, or general mental health services from Veterans Affairs Medical and Regional Office Centers for the years 1995 (for Hawaii) and 1996–1997 (for California).

Potential participants were selected from both registries using a multistage sampling procedure. First, names were drawn on the basis of Asian surname (if surname was racially ambiguous, a determination was made by examining the first or middle name).[2] Second, the lists were stratified by probable Asian ethnicity for the four major Asian ethnic groups (Chinese, Filipino, Japanese/Okinawan, and Korean) on the basis of Asian surname or first name.[3] Third, a random sample was drawn from each ethnic subgroup using a sampling ratio that would draw roughly comparably sized samples from each of the four major Asian subgroups to try to obtain an adequate representation from each ethnic subgroup.[4]

Table 1
Demographic Characteristics of the Sample

Variable	%
Marital status	
Single/never married	9
Married/live-in partner/remarried	71
Divorced/separated/widowed	20
Employment history	
Full time	39
Unemployed	13
Disabled	13
Retired	23
Other	12
Current yearly income	
Under $20,000	30
$20,000–$29,000	12
$30,000–$39,000	21
$40,000–$49,000	8
$50,000+	29
Geographical region	
Hawaii	59
California	24
Guam and Samoa	17
Other	>1
Race/ethnicity	
Chinese	14
Filipino	12
Korean	3
Japanese/Okinawan	21
Chamorro	13
Mixed Asian or mixed race (Asian/other)	37
Military branch of service	
Army	70
Marines	10
Navy	10
Air Force	10
Military field status	
Mostly or entirely "in the field"	36
More "in the field" than in base camps	11
Equal time "in the field" and in the rear	14
More in base camp than "in the field"	18
Mostly or entirely in base camps or rear areas	21
Rank	
Enlisted E1–E4	30
Enlisted E5	26
Enlisted E6–E9	23
Warrant Officer 1–4, Officer 01–06	20

Note. Percentages summing to under 100% reflect rounding. There was 1 female participant in the sample.

Procedure

Data were collected from January 1998 to May 1999 in California, Hawaii, and Guam. Prospective participants drawn from the registries or those identified by the snowball sampling method were mailed a recruitment letter and flyer that described the project. When telephone numbers were available, recruiters called to inquire about whether the letter had been received and to assess the veteran's interest in and eligibility for the study. Potential participants were told that the purpose of the study was to understand the experiences of Asian American veterans who served in Vietnam, particularly those experiences related to race and ethnicity in a military or combat context. Participants who were interested and eligible were scheduled to participate in the study. On arrival at a VA Medical Center or Vet Center and after their signed informed consent was obtained, participants were provided with a packet of questionnaires, including the

[2] Although this method excluded mixed-race Asian Americans with an Asian mother but non-Asian father, mixed-race Asians of such heritage were included in the snowball sampling.

[3] Commonly, Chinese and Korean surnames are monosyllabic, Japanese/Okinawan names are multisyllabic, and Filipino names are Hispanic sounding. When a surname was indistinguishable between Korean and Chinese, we used a list of Korean surnames obtained from the Korean Consulate General's office to identify Korean Americans. One individual made the ethnic subgroup designations, and a separate individual checked over these designations for concurrent judgment. In phone screening, ethnic subgroup identity was confirmed.

[4] For example, as the total numbers of Chinese, Filipino, Japanese, and Korean Americans from the San Francisco Bay Area, Northern California Department of Defense Manpower Data Center registry were 95, 2289, 260, and 14, respectively, the sampling ratios for sample selection from this registry were 1:2 for Chinese, 1:30 for Filipino, 1:5 for Japanese, and 1:1 for Korean Americans.

preliminary version of the RRSS. On completion of these questionnaires, they were debriefed individually in a private office on site. Participants were provided $50 as compensation for time and travel. The following scales and questionnaires were administered, in this order: Background Information, Military History, preliminary pool of RRSS,[5] Combat Exposure Scale,[6] Mississippi Scale for Combat-Related PTSD, Brief Symptom Inventory, and Medical Treatment History. All study procedures and instruments were reviewed, approved, and monitored by an institutional review board.

Measures of PTSD Symptoms, General Psychological Distress, and Combat Exposure

Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (Mississippi Scale). The Mississippi Scale was used to measure PTSD. The Mississippi Scale is composed of 35 items that are rated on a scale from 1 (*never*) to 5 (*very frequently*); scores can range from 35 to 175. Keane, Caddell, and Taylor (1988) constructed this self-report scale to detect PTSD symptomatology in male veterans and reported an overall efficiency of .90 in differentiating veterans with and without PTSD, using a cutoff score of 107. The Mississippi Scale has shown excellent reliability with internal consistency and test–retest coefficients above .90 (Keane et al., 1988). The Mississippi Scale has also been found to have excellent specificity (.89) and sensitivity (.93) with PTSD clinical diagnoses (Kulka et al., 1990).

Brief Symptom Inventory. The measure of psychological distress used in this study was the Brief Symptom Inventory, a 53-item multidimensional self-report symptom inventory designed as a screening or outcome measure for psychopathology, psychiatric symptomatology, or psychological distress (Derogatis & Melisaratos, 1983). The Brief Symptom Inventory is a brief form of the Symptom Checklist–90—Revised (Derogatis, Rickels, & Rock, 1976). Each item is rated on a 5-point scale of frequency of distress, from 0 (*not at all*) to 4 (*extremely*). High convergence between Brief Symptom Inventory subscales and like dimensions of the Minnesota Multiphasic Personality Inventory provides good evidence of convergent validity (Derogatis & Melisaratos, 1983). Extensive reliability and validity information is available for the Brief Symptom Inventory (Derogatis, 1993).

Combat Exposure Scale. The Combat Exposure Scale is a seven-item self-report measure of combat exposure comprised of Likert-type items that are weighted differentially according to the severity of the experience (Keane et al., 1989). Total scores on the Combat Exposure Scale can range from 0 to 41. This scale has been found to have acceptable internal consistency (alpha coefficient = .85) and test–retest reliability (r = .97; Keane et al., 1989). In previous studies (Keane et al., 1989), scores on the Combat Exposure Scale were found to correlate positively with scores on the Mississippi Scale for PTSD (r = .43, $p < .01$). Multiple studies have found combat exposure to be the strongest predictor of PTSD among male Vietnam veterans (King, King, Foy, Keane, & Fairbank, 1999).

Results

Response Rates

The overall participation rate of veterans selected from all the registries combined was 42%. The participation rates in Hawaii for the Defense Manpower Data Center and Veterans Affairs treatment seekers were 53% and 50%, respectively. The participation rates in California for the Defense Manpower Data Center and VA treatment seekers were 50% and 26%, respectively.

Item Reduction Based on Content Validity, Redundancy, Distribution, and Item–Total Correlations

The original 94 items were reviewed for content validity, item redundancy, and distribution, prior to the item–total correlations and factor analyses. Eleven items were deleted on the basis of this review. Specifically, five race-related items were deleted because they appeared to be measuring avoidance, which as a symptom of PTSD might be a confounding variable in our analysis of construct validity. Two items were deleted because they could be measuring some form of mental health, which could also potentially confound our analyses of construct validity, as the Brief Symptom Inventory and Mississippi Scale are measures of mental health. Two items were deleted because they were deemed too global in reference compared with the greater specificity of the other items. Finally, 2 items were deleted because they each appeared redundant with other items. This phase of the item reduction resulted in 83 items.

Then the item pool of 83 was reduced to 67 after an additional 16 items were removed from the item pool because of inadequate distribution. For example, the item "How often, if ever, did American troops ever kill, wound, or otherwise hurt any Vietnamese whom you knew personally?" was deleted because of its low mean and variance (.50 and .98, respectively) and high skewness (2.01). All items with the "none" to "four or more times" response alternatives were deleted because of inadequate distribution, which meant that the instrument now had a uniform response alternatives ("never" to "very frequently").

Corrected item–total correlations with each of the three domains were conducted. Using a cutting point of .75 and above for racial prejudice and stigmatization, .65 and above for the bicultural identification and conflict, and .70 and above for racist environment for corrected item–total correlations, we deleted another 28 items, which resulted in a 39-RRSS item pool.[7]

Factor Analysis

The remaining 39 items were factor analyzed by SPSS Version 10.0 using an oblimin rotation with maximum likelihood estimation. Items were required to load at .50 or above. The three-factor solution accounted for 65% of the variance.[8] Table 2 shows the descriptive statistics (means and standard deviations) and factor loadings for the 33 RRSS items meeting the item inclusion criteria. The 6 items not meeting the loading criteria were

[5] The Impact of Race-Related Events questionnaire and Positive Aspects of Ethnicity questionnaire were administered after the Race-Related Experiences questionnaire and before the Combat Exposure Scale.

[6] The Brief War Zone Scale (Revised) was administered between the Combat Exposure Scale and the Mississippi Scale, as a supplemental war-zone scale.

[7] To construct a scale of roughly 30 items and have sufficient item representation in each of the subscales, the cutting point for Racial Prejudice and Stigmatization (which had 54 items) was more stringent than for Racist Environment and Bicultural Identification and Conflict (which had 11 and 29 items, respectively). The cutting point for Bicultural Identification and Conflict was less stringent than for Racist Environment for conceptual completeness; 4 items had parallel phrasing ("Vietnamese reminded you of relative or friend" for "living" and "wounded or dead," for "male" and "woman or child"); to have used the same cutoff for Bicultural Identification and Conflict as for Racist Environment would have resulted in nongender parallel items (e.g., 2 items that were male-related and 1 item female-related or vice versa).

[8] Extraction of two factors yielded a solution that was not easily interpretable and accounted for only 59% of the variance. The extraction of further factors beyond three yielded trivial one- and two-item factors of little utility.

Table 2
Descriptive Statistics and Factor Loadings of Race-Related Stressor Scale Items

Item	*M*	*SD*	Factor 1	Factor 2	Factor 3
Factor 1: Racial Prejudice and Stigmatization					
Pointed out as example of what the enemy looked like	1.31	1.32	**.73**	−.01	.07
Others made racially insensitive remarks about your doing things like eating rice, using chopsticks	1.77	1.37	**.55**	.08	.22
Singled out for harsher treatment than other races of the same rank	1.26	1.25	**.94**	−.06	−.09
Ignored/treated more disrespectfully than other races of same rank	1.46	1.21	**.95**	−.10	−.02
Your authority questioned because of being Asian	1.25	1.24	**.78**	−.04	.05
Resented because you were Asian	1.48	1.21	**.88**	−.06	.03
Called you racial slurs like "gook," "slant eyes"	1.86	1.31	**.78**	−.05	.10
Treated by other Americans with racial hatred or hostility	1.43	1.13	**.85**	−.01	.07
Treated unfairly because of your race or ethnicity	1.77	1.26	**.92**	−.02	−.04
Treated by other Americans as outsider or foreigner	1.77	1.20	**.76**	.07	.09
Other Americans stayed away from you or told you to get away because you were Asian	1.06	1.15	**.88**	.06	−.07
Denied access or hassled about access to certain areas because you were Asian	0.97	1.12	**.79**	.09	−.08
Tried or felt need to prove you were American	1.50	1.47	**.69**	.11	.00
Expressed anti-Asian sentiments in front of other Americans even if you did not feel that way	0.92	1.15	**.60**	.18	−.03
Other Americans did or said things indicating you looked like a Vietnamese	1.81	1.29	**.59**	.07	.15
You "stood out" or were looked at as if you did not belong	1.84	1.23	**.75**	−.04	.16
Felt isolated because you were the only Asian American	1.87	1.37	**.66**	−.05	.21
You did not fit in with the rest of the Americans in your unit	1.39	1.33	**.62**	.22	.05
Concerned your loyalty questioned if interacted with Vietnamese civilians	1.18	1.25	**.54**	.27	.06
Factor 2: Bicultural Identification and Conflict					
Could identify with people or culture of Vietnam	2.24	1.23	−.02	**.65**	.15
Stronger identification with Vietnamese civilians than with White or Black Americans	1.68	1.35	.12	**.54**	.16
Living Vietnamese male reminded you of relative or friend	1.53	1.26	−.16	**.96**	.05
Living Vietnamese woman or child reminded you of relative or friend	1.67	1.28	−.11	**.91**	.10
Wounded or dead Vietnamese male reminded you of relative or friend	1.14	1.29	.01	**.89**	−.07
Wounded or dead Vietnamese woman or child reminded you of relative or friend	1.14	1.33	.16	**.83**	−.14
Felt more like the Vietnamese than the Americans	1.32	1.28	.09	**.66**	.06
Factor 3: Racist Environment					
Military personnel described Asian lives as having no or lesser value than American lives	2.35	1.22	.11	.04	**.70**
Military personnel referred to Asians as "gooks" or other racial slur	3.03	0.98	−.12	.01	**.91**
Military personnel expressed hatred toward Asians	2.56	1.12	.04	.04	**.83**
Military personnel treated Asians as inferior	2.53	1.15	.05	−.03	**.81**
Military personnel made insulting remarks about South Vietnamese size, smell, intelligence, diet	2.92	1.09	−.03	.07	**.82**
Asian American military personnel stared at in ways other races were not	2.34	1.10	.24	−.02	**.56**
Military personnel treated Asians as if their lives were of lesser value than American lives	2.10	1.20	.25	.06	**.58**

Note. Sample size for means and standard deviations varies from 297 to 300. Primary factor loadings are in boldface type.

eliminated from further analysis. We named the first factor Racial Prejudice and Stigmatization. All items that loaded on this factor were originally sorted as racial prejudice and stigmatization items with the exception of 2 items: "How often, if ever, did you try to prove, or feel the need to prove, that you were American?" and "Did you ever feel like you did not really fit in with the rest of the Americans in your unit?" These 2 items were originally sorted into the bicultural identification and conflict domain but loaded in the factor analysis on the Racial Prejudice and Stigmatization factor instead. We named the second factor Bicultural Identification and Conflict and named the third factor exposure to a Racist Environment. All items that loaded on Bicultural Identification and Conflict and all items that loaded on Racist Environment were originally sorted into these domains. The factor analysis largely corresponded with the original sorting.

Intercorrelations Between the RRSS Subscales

The three subscales of the 33-item RRSS are moderately intercorrelated. The correlation between Racial Prejudice and Stigmatization and Racist Environment was .72, the correlation between Racial Prejudice and Stigmatization and Bicultural Identification and Conflict was .63; and the correlation between Bicultural Identification and Conflict and Racist Environment was .52 ($p < .001$ for all correlations). The moderate correlations suggest that the three subscales reflect overlapping but somewhat distinct factors.

Internal Consistency

The internal consistency reliability (Cronbach alpha coefficient) was high for the entire RRSS scale ($\alpha = .97$; 33 items) and for each of the three factors: Racial Prejudice and Stigmatization ($\alpha = .97$; 19 items), Bicultural Identification and Conflict ($\alpha = .93$; 7 items), and Racist Environment ($\alpha = .93$; 7 items).

Descriptive Analyses

Mean RRSS total scores were 56.5 ($SD = 29.9$), with a range of 1–128 out of a possible range of 0–132. The mean score on the Combat Exposure Scale was 17.5 ($SD = 12.1$) with a range of 0–41. The mean score on the Mississippi Scale for PTSD was 92.9 ($SD = 32.2$) with a range of 39–171. The mean Brief Symptom

Inventory score was 62.61 ($SD = 58.9$) with a range of 0–212. As expected, veterans with higher combat exposure had higher scores on the Mississippi Scale ($r = .50$, $p < .001$). The correlation coefficient between combat exposure and Mississippi Scale scores in this study is well within the range of .43–.57 reported in other studies of Vietnam veterans (Keane et al., 1989; Watson, Kucala, Manifold, Vassar, & Juba, 1988; Wolfe, Brown, Furey, & Levin, 1993).

A total of 37% of our sample scored above the empirically derived PTSD cutoff score of 107 on the Mississippi Scale. Previous studies (e.g., Keane et al., 1989) reported that this cutoff score had high sensitivity and specificity for PTSD diagnosis as determined by structured clinical interviews. The percentage of Asian American veterans in this study who scored above the PTSD threshold on the Mississippi Scale was within the range of what has been found for African American, Hispanic, Native American, and Native Hawaiian Vietnam veterans in other studies (see Friedman, 1998; Kulka et al., 1990).

We also examined the bivariate relationship between military rank and PTSD symptomatology as assessed by the Mississippi Scale. Military rank distributions were as follows: lowest-ranked enlisted (E1–E3), 5.3%; middle-ranked enlisted (E4–E5), 51.3%; highest-ranked enlisted (E6–E9), 23.3%; warrant officers (W1–W4), 2.7%; lowest-ranked officers (O1–O3), 5.3%; and middle-ranked officers (O4–O6), 12.0%. With E1–E5 recoded as a "0" and E6–O6 as a "1" for rank, the correlation between military rank and Mississippi Scale for PTSD scores was –.45 ($p < .001$). PTSD symptomatology is more prevalent among lower ranked military personnel than among higher ranked military personnel, a finding consistent with other studies (Kulka et al., 1990). In summary, the percentage of respondents who met criteria for PTSD on the basis of their Mississippi Scale scores, and the statistical relationships between combat exposure and PTSD and between military rank and PTSD, were all consistent with other findings in the literature. Table 3 contains the correlations among the measures and RRSS (total and subscales).

Construct Validity

One part of construct validity explication involves the assessment of how the RRSS relates to or converges with other constructs, including theoretically related constructs. This aspect of construct validity was assessed by conducting (a) bivariate correlational analyses between RRSS scores and other constructs (the Combat Exposure Scale, military rank, Brief Symptom Inventory, and the Mississippi Scale for PTSD) and (b) a series of hierarchical regression analyses for the RRSS with the Brief Symptom Inventory and the Mississippi Scale for PTSD, taking into account combat exposure and military rank. In addition, we conducted a logistic regression analysis to examine the association between exposure to race-related stressors and dichotomous PTSD diagnosis using the 107 cut score on the Mississippi Scale.

Bivariate correlational analyses. The correlation between RRSS total scores and Combat Exposure Scale scores was .41 ($p < .001$), and the correlation between RRSS total scores and military rank was –.37 ($p < .001$). Asian American Vietnam veterans with high combat exposure were significantly more likely to be exposed to race-related stressors than those with low combat exposure. Lower ranked Asian American military personnel were significantly more likely to be exposed to race-related stressors than higher ranked personnel, which is consistent with the finding of the Department of Defense survey (Scarville, Button, Edwards, Lancaster, & Elig, 1999) that found that lower ranked minority military personnel reported more offensive racial encounters than their higher ranked counterparts. Higher combat exposure and lower military rank tended to be risk factors for exposure to race-related stressors. In contrast, lower combat exposure and higher military rank tended to be protective factors for exposure to race-related stressors.

To further examine construct validity, we calculated Pearson product–moment correlations between the RRSS total and subscale scores and scores on the Brief Symptom Inventory, a validated measure of general psychiatric symptomatology. Significant Pearson product–moment correlations were found between the RRSS total scores and the Brief Symptom Inventory ($r = .67$, $p < .001$) and between RRSS subscales and the Brief Symptom Inventory ($r = .68$, $p < .001$ for Racial Prejudice and Stigmatization; $r = .51$, $p < .001$ for Bicultural Identification and Conflict; and $r = .43$, $p < .001$ for Racist Environment).

We also calculated Pearson product–moment correlations between the RRSS total and subscale scores and scores on the Mississippi Scale for PTSD. The correlation between RRSS total scores and Mississippi Scale scores was .68 ($p < .001$), which supported our expectation that there would be a significant correlation between exposure to race-related stressors and PTSD symp-

Table 3
Correlations Among the Measures and Race-Related Stressor Scale (RRSS; Total and Subscales)

Variable	1	2	3	4	5	6	7	8
1. CES	—	.50	.49	−.23	.41	.38	.36	.36
2. Mississippi Scale		—	.90	−.45	.68	.67	.53	.48
3. BSI			—	−.39	.67	.68	.51	.43
4. Military rank				—	−.37	−.36	−.31	−.26
5. RRSS total					—	.96	.77	.82
6. RRSS–RS						—	.63	.72
7. RRSS–BC							—	.52
8. RRSS–RE								—

Note. Sample size varies from 277 to 298. All correlations were significant at the .001 level. CES = Combat Exposure Scale; BSI = Brief Symptom Inventory; RRSS total = RRSS total scale score; RRSS–RS = Racial Prejudice and Stigmatization subscale; RRSS–BC = Bicultural Identification and Conflict subscale; and RRSS–RE = Racist Environment subscale.

tomatology. Significant correlations were found between the Mississippi Scale score and RRSS subscales ($r = .67$, $p < .001$ for Racial Prejudice and Stigmatization; $r = .53$, $p < .001$ for Bicultural Identification and Conflict; and $r = .48$, $p < .001$ for Racist Environment). The pattern of correlations supports our expectation that RRSS total scores and subscale scores would correlate with symptom measures of PTSD specifically and psychiatric or psychological distress generally.

General psychiatric symptoms measure. To examine the construct validity of the RRSS in regard to theoretically related constructs, we first conducted hierarchical multiple regression analyses, with Brief Symptom Inventory scores as the measure of general psychiatric symptoms entered as the dependent variable. In Step 1, combat exposure and military rank were entered into the equation as independent variables. In Step 2, one of the race-related stressor variables (total RRSS scale score or one of the three RRSS subscale scores) were added to the equation along with combat exposure and military rank.

As shown in Table 4, the beta coefficients of the two variables, combat exposure and military rank, were statistically significant in Step 1. Higher combat exposure was associated with higher Brief Symptom Inventory scores ($\beta = .42$, $p < .001$), and higher military rank was associated with lower Brief Symptom Inventory scores ($\beta = -.29$, $p < .001$). When the RRSS total scale scores were entered in Step 2, combat exposure and military rank continued to be statistically significant. In addition, race-related stressors were significantly related to Brief Symptom Inventory scores ($\beta = .51$, $p < .001$), over and above the contribution of combat exposure and military rank. The same pattern of findings was also found when the three RRSS subscales—Racial Prejudice and Stigmatization ($\beta = .54$, $p < .001$), Bicultural Identification and Conflict ($\beta = .33$, $p < .001$), and Racist Environment ($\beta = .24$, $p < .001$)—were entered in Step 2 after combat exposure and military rank in their respective panels.

Taken together, combat exposure and military rank accounted for 31% of the variance in Brief Symptom Inventory scores (adjusted $R^2 = .31$) in Step 1. In the model with three predictors, combat exposure, military rank, and RRSS explained 50% of the variance in Brief Symptom Inventory scores (adjusted $R^2 = .50$). Thus, an additional 19% of the variance in Brief Symptom Inventory scores is accounted for by adding the RRSS to the regression model. These results indicate that exposure to race-related stressors significantly contribute to general psychiatric symptoms above and beyond the contributions of combat exposure and military rank, thus supporting the construct validity of the RRSS.

PTSD measures. Hierarchical multiple regressions were also conducted for PTSD symptoms, with the Mississippi Scale scores as a measure of PTSD symptoms entered as the dependent variable, as shown in Table 5. The same pattern of findings emerged in this series of analyses as were found for the Brief Symptom Inventory. Again, higher combat exposure was positively associated with Mississippi Scale scores ($\beta = .43$, $p < .001$), and higher military rank was negatively associated with Mississippi Scale scores ($\beta = -.35$, $p < .001$). When the RRSS total scale scores were entered in Step 2, combat exposure and military rank continued to be statistically significant. In addition, the RRSS, the measure of race-related stressors, was significantly associated with Mississippi Scale scores ($\beta = .50$, $p < .001$). The same pattern of findings was also found when each of the three RRSS subscales were entered in Step 2 after combat exposure and military rank: Racial Prejudice and Stigmatization ($\beta = .51$, $p < .001$), Bicultural Identification and Conflict ($\beta = .34$, $p < .001$), and Racist Environment ($\beta = .28$, $p < .001$).

Combat exposure and military rank accounted for 36% of the variance in Mississippi Scale scores (adjusted $R^2 = .36$). The full model—combat exposure, military rank, and RRSS—explained 56% of the variance in PTSD symptoms (adjusted $R^2 = .56$). Thus 20% more of the variance in Mississippi Scale scores was accounted for by adding RRSS to the regression model. This conservative test demonstrates that exposure to race-related stressors contributes significantly to predicting PTSD symptoms among Asian American Vietnam veterans and gives further support for the construct validity of the RRSS scale.

In addition, we conducted a hierarchical logistical regression on Mississippi Scale scores using the score of 107 and above as the cutoff score for PTSD (Keane et al., 1988). Table 6 shows the results of the analyses with the dependent variable dichotomized by scores of 107 and above on the Mississippi Scale and those whose scores fell under 107 on the same scale. In Table 5, PTSD symptoms were treated as a linear variable; in contrast, in Table 6, with a cutoff point on the Mississippi Scale, PTSD was treated as a dichotomous variable. Model 1 gives the results when combat exposure and military rank are analyzed to predict a score of 107 or above on the Mississippi Scale, and Model 2 retains combat exposure and military rank and adds the race-related stressors (RRSS scale total or one of the three RRSS subscales; see Table 6). Model 1, consistent with the earlier analysis, indicates that combat exposure and military rank were strong predictors of a score of 107 or higher on the Mississippi Scale. High combat exposure was positively associated with a score of 107 or higher on the Mississippi Scale, and higher military rank was negatively associated with a score of 107 or higher on the Mississippi Scale (both are statistically significant at $p < .001$).

In Model 2, RRSS scores (the RRSS scale total and each of the three subscales) were added into the hierarchical logistic regression equations. The RRSS total and the RRSS subscales were each significantly related to predicting a score of 107 or higher on the Mississippi Scale. The RRSS and its three subscale scores (Racial Prejudice and Stigmatization, Bicultural Identification and Conflict, and a Racist Environment) each significantly predicted a score of 107 or higher on the Mississippi Scale (at $p < .001$), providing further support for the construct validity of the RRSS.

Study 3

Overview

The purpose of Study 3 was to assess temporal stability of the RRSS with a sample of Asian American Vietnam war veterans.

Method

Participants

Test–retest reliability of the RRSS was evaluated with a subsample of 61 male Asian American Vietnam veterans selected from the 300 participants in Study 2. To increase the likelihood of variation in military rank and exposure to race-related experiences, we included participants using the snowball sample ($n = 50$), the Department of Veterans Affairs registry ($n = 9$), and the Defense Manpower Data Center registry ($n = 2$) and

Table 4
Hierarchical Regression Analysis for Generalized Psychiatric Symptoms: Combat Exposure, Military Rank, and Race-Related Stressors (Total Score and Subscales)

Step and variable	*B*	*SE B*	β	*t*	*df*
Race-related stressors (total scale score)					
Step 1					272
Combat exposure	2.07	0.25	.42**	8.27	
Military rank (0 = *lower*, 1 = *higher*)	−34.75	6.06	−.29**	−5.74	
R^2	0.32				
Adjusted R^2	0.31				
N	275				
Step 2					271
Combat exposure	1.17	0.23	.24**	5.09	
Military rank (0 = *lower*, 1 = *higher*)	−16.09	5.45	−.14*	−2.95	
Race-related stressors	1.01	0.10	.51**	10.33	
R^2	0.51				
Adjusted R^2	0.50				
N	275				
Racial prejudice and stigmatization					
Step 1					275
Combat exposure	2.07	0.25	.43**	8.36	
Military rank (0 = *lower*, 1 = *higher*)	−34.50	6.00	−.29**	−5.75	
R^2	0.32				
Adjusted R^2	0.31				
N	278				
Step 2					274
Combat exposure	1.22	0.22	.25**	5.65	
Military rank (0 = *lower*, 1 = *higher*)	−15.13	5.22	−.13*	−2.90	
Racial prejudice and stigmatization	1.64	0.14	.54**	11.52	
R^2	0.54				
Adjusted R^2	0.54				
N	278				
Bicultural identification and conflict					
Step 1					276
Combat exposure	2.09	0.25	.42**	8.38	
Military rank (0 = *lower*, 1 = *higher*)	−35.35	6.02	−.30**	−5.88	
R^2	0.32				
Adjusted R^2	0.32				
N	279				
Step 2					275
Combat exposure	1.58	0.25	.32**	6.42	
Military rank (0 = *lower*, 1 = *higher*)	−25.62	5.84	−.22**	−4.39	
Bicultural identification and conflict	2.55	0.40	.33**	6.33	
R^2	0.41				
Adjusted R^2	0.40				
N	279				
Racist environment					
Step 1					276
Combat exposure	2.06	0.25	.42**	8.27	
Military rank (0 = *lower*, 1 = *higher*)	−35.39	6.03	−.30**	−5.87	
R^2	0.32				
Adjusted R^2	0.32				
N	279				
Step 2					275
Combat exposure	1.67	0.26	.34**	6.52	
Military rank (0 = *lower*, 1 = *higher*)	−29.61	5.98	−.25**	−4.95	
Racist environment	2.11	0.47	.24**	4.46	
R^2	0.37				
Adjusted R^2	0.36				
N	279				

Note. The sample size varies slightly between blocks of variables because of occasional missing data.
* $p < .01$. ** $p < .001$.

Table 5
Hierarchical Regression Analysis for Posttraumatic Stress Disorder Symptoms: Combat Exposure, Military Rank, and Race-Related Stressors (Total Score and Subscales)

Step and variable	*B*	*SE B*	β	*t*	*df*
Race-related stressors (total scale score)					
Step 1					279
Combat exposure	1.15	0.13	.43**	8.78	
Military rank (0 = *lower*, 1 = *higher*)	−22.28	3.13	−.35**	−7.11	
R^2	0.37				
Adjusted R^2	0.36				
N	282				
Step 2					278
Combat exposure	0.69	0.12	.26**	5.95	
Military rank (0 = *lower*, 1 = *higher*)	−12.74	2.76	−.20**	−4.62	
Race-related stressors (total scale score)	0.55	0.05	.50**	11.03	
R^2	0.56				
Adjusted R^2	0.56				
N	282				
Racial prejudice and stigmatization					
Step 1					281
Combat exposure	1.14	0.13	.43**	8.80	
Military rank (0 = *lower*, 1 = *higher*)	−22.56	3.12	−.35**	−7.22	
R^2	0.37				
Adjusted R^2	0.37				
N	284				
Step 2					280
Combat exposure	0.75	0.11	.28**	6.64	
Military rank (0 = *lower*, 1 = *higher*)	−12.82	2.72	−.20**	−4.72	
Racial prejudice and stigmatization	0.85	0.07	.51**	11.48	
R^2	0.57				
Adjusted R^2	0.57				
N	284				
Bicultural identification and conflict					
Step 1					282
Combat exposure	1.14	0.13	.42**	8.76	
Military rank (0 = *lower*, 1 = *higher*)	−22.87	3.13	−.35**	−7.31	
R^2	0.37				
Adjusted R^2	0.37				
N	285				
Step 2					281
Combat exposure	0.88	0.13	.33**	6.95	
Military rank (0 = *lower*, 1 = *higher*)	−17.55	2.99	−.27**	−5.87	
Bicultural identification and conflict	1.45	0.21	.34**	7.02	
R^2	0.46				
Adjusted R^2	0.46				
N	285				
Racist environment					
Step 1					283
Combat exposure	1.16	0.13	.43**	8.90	
Military rank (0 = *lower*, 1 = *higher*)	−22.84	3.12	−.35**	−7.33	
R^2	0.38				
Adjusted R^2	0.37				
N	286				
Step 2					282
Combat exposure	0.92	0.13	.34**	7.07	
Military rank (0 = *lower*, 1 = *higher*)	−19.45	3.01	−.30**	−6.46	
Racist environment	1.37	0.24	.28**	5.75	
R^2	0.44				
Adjusted R^2	0.44				
N	286				

Note. The sample size varies slightly between blocks of variables because of occasional missing data.
** $p < .001$.

Table 6
Hierarchical Logistic Regression Analysis for Posttraumatic Stress Disorder Diagnostic Cutoff Score: Combat Exposure, Military Rank, and Race-Related Stressors (Total Score and Subscales)

Variable	Model 1		Model 2	
	β	Odds ratio	β	Odds ratio
Race-related stressors (total scale score)				
Combat exposure	0.09**	1.09	0.07**	1.08
	(.01)		(.02)	
Military rank	−1.62**	0.20	−1.15**	0.32
	(.31)		(.36)	
Race-related stressors			0.05**	1.06
			(.01)	
N	283			
Racial prejudice and stigmatization				
Combat exposure	0.09**	1.09	0.08**	1.08
	(.01)		(.02)	
Military rank	−1.64**	0.19	−1.22**	0.30
	(.31)		(.36)	
Racist prejudice and stigmatization			0.08**	1.08
			(.01)	
N	285			
Bicultural identification and conflict				
Combat exposure	0.09**	1.09	0.08**	1.08
	(.01)		(.02)	
Military rank	−1.65**	0.19	−1.38**	0.25
	(.31)		(.34)	
Bicultural identification and conflict			0.14**	1.15
			(.03)	
N	286			
Racist environment				
Combat exposure	0.09**	1.09	0.08**	1.08
	(.01)		(.01)	
Military rank	−1.65**	0.19	−1.45**	0.24
	(.31)		(.32)	
Racist environment			0.13**	1.14
			(.03)	
N	287			

Note. Numbers in parentheses are standard errors. The sample size varies between blocks of variables because of occasional missing data.
** $p < .001$.

included veterans from Hawaii, California, and Guam for geographical dispersion.

Procedure

Participants were readministered the RRSS within a 5–16-week interval between test administrations. Variation in test–retest intervals was a function of several factors, including budget limitations that required that we schedule the retest for times when the research staff or the participant could travel to or from one city or island to the city or island where the study site was located. The test–retest subsample received $25 for their time and travel.

Results

Using a Pearson product–moment correlation, we calculated test–retest reliability at .85 for the total RRSS scale. Test–retest reliabilities for the separate factors were .84 for Racial Prejudice and Stigmatization, .84 for Bicultural Identification and Conflict, and .69 for Racist Environment.

General Discussion

This research advances the study of exposure to race-related stressors through the development and validation of the RRSS, which operationalizes exposure to perceived military and war-zone race-related stressors for Asian American Vietnam veterans. The test–retest reliability of the RRSS indicates adequate stability over time. The RRSS had excellent internal consistency, within the range of what DeVellis (1991) considered respectable for a scale that is intended for individual assessment or clinical purposes. The study also contributes to the conceptual definition of the construct of race-related stressors. The RRSS adds to the body of existing measures available to assess the impact of perceived racism on mental health and is the first validated measure of exposure to race-related stressors among minority veterans.

The relationships among the RRSS and measures of combat exposure, generalized psychiatric symptoms or psychological distress (Brief Symptom Inventory), and PTSD symptoms and the PTSD diagnostic cutoff score (Mississippi Scale) provide support for construct and convergent validity. The correlations between

RRSS total and subscale scores and generalized psychiatric symptoms and PTSD, as measured by the Brief Symptom Inventory and the Mississippi Scale, respectively, were strong, indicating covariation with general psychiatric symptoms and PTSD. Findings of the bivariate correlations and hierarchical regression analyses support the hypothesis that exposure to race-related stressors is associated with increased generalized psychiatric distress and with symptoms of PTSD among Asian American Vietnam veterans. Further investigation of the convergent validity of the RRSS is warranted. However, such studies would require that other measures of exposure to racist events, such as the Schedule of Racist Events (Klonoff & Landrine, 1999), be adapted and validated with samples of Asian American veterans.

The results support the hypothesis that for Asian American Vietnam veterans, perceived racial prejudice and stigmatization, bicultural identification and conflict, and exposure to a racist environment, singularly and in total, contribute to general psychiatric and PTSD symptoms. Asian American Vietnam veterans who scored higher on items assessing the RRSS dimensions were significantly more likely to exceed the PTSD diagnostic cutoff score on the Mississippi Scale, even when controlling for combat exposure and military rank.

Consistent with our expectations, the hierarchical regressions revealed that race-related stressor exposure, combat exposure, and military rank combined accounted for 50% of the variance in Brief Symptom Inventory scores compared with 31% of the variance for combat exposure and military rank alone. Similarly, race-related stressors, combat exposure, and military rank combined accounted for 56% of the variance in PTSD symptoms compared with 36% of the variance for combat exposure and military rank alone. Thus, when exposure to race-related stressors is hierarchically added to a model with combat exposure and rank, the variance explained in each symptom measure was increased by 19% to 20%. Considering that combat exposure has been consistently found to be the strongest predictor of PTSD among Vietnam veterans (King et al., 1999), these findings are striking.

The finding that both race-related stressor total scores and exposure to racial prejudice and stigmatization were stronger predictors of PTSD symptoms than exposure to combat, as measured by the Combat Exposure Scale, underscores the notion that personal experiences of racism are potent risk factors for PTSD.

The findings suggest that racist behaviors directed at Asian Americans in a highly racial war may have led some Asian Americans to fear death or physical harm from both fellow American soldiers and the enemy. Such fear may have afforded these veterans little to no psychological sense of safety while serving in the military or war zone and may have precipitated a physiological state of continuous hypervigilance and arousal. In addition, the findings may lend support to the proposal previously described that race-based social and psychological alienation from others, which emerges from the blocking of common identification with other Americans by other Americans, may be particularly stressful to Asian Americans who served in the Vietnam War because of the importance of social inclusion in one's unit for survival in war. Furthermore, the findings suggest that for these minority veterans, ethnic or cultural identification with civilians of similar race who are the victims of war, most evident in a guerrilla war (which characterized the Vietnam War), appears to add to the stresses of war. Finally, the findings may suggest that Asian Americans who experienced race-related stressors felt prepared for war but not racism (D. Wong, personal communication, April 1, 2000).

Our findings of strong associations between perceived exposure to racial prejudice and stigmatization, bicultural identification and conflict, and exposure to a racist environment (as measured by the RRSS) and general psychiatric symptoms in Asian American Vietnam veterans are consistent with the recent finding that perceived racial discrimination is associated with general psychiatric symptoms among the general population of African Americans (Klonoff et al., 1999). This similarity in findings suggests that the relationship between perceived race discrimination and prejudice and psychiatric symptoms may be found among racial and ethnic minorities in general. It also suggests that the relationship between perceived racism and stress or mental health may extend to minority groups other than African American civilians using other measures than those used by Klonoff et al. (1999).

The development and validation of this scale have implications for measuring race-related stressor exposure among other racial and ethnic minority groups. Although the items in this scale were developed for a specific population and context, the dimensions of race-related stress—exposure to racial prejudice and stigmatization, bicultural identification and conflict, and a racist environment—are certainly not limited to Asian Americans or to people exposed to armed conflicts. Because little is empirically known about the race-related experiences of minorities and the contributions of these experiences to PTSD, we hope that the construction and validation of the RRSS will contribute conceptually and methodologically to the development of a larger body of research in this area.[9] To enhance the generalization of these findings across persons, settings, and times, we encourage the adaptation and validation of the RRSS items for use with other racial and ethnic minority populations and across contexts. The development of this measure of exposure to race-related stressors, with demonstrated reliability and validity for this specific minority group, could ultimately contribute to the construction of a generic scale of exposure to race-related stressors across ethnic and racial groups.

In addition, recent survey findings by the U.S. Department of Defense suggest that the experiences of negative race-related events among military service personnel are not uniquely related to events of the Vietnam War that occurred 30 years ago. A survey of negative racial experiences among active duty service members (Scarville et al., 1999) found that minority service members ex-

[9] Future research on the RRSS might consider streamlining the measure, as two items that were similarly worded could be reworded for less redundancy. "How often . . . a living Vietnamese male reminded you of a family member, relative, or friend?" was also asked in regard to ". . . a living Vietnamese woman or child," and "How often . . . a wounded or dead Vietnamese male reminded you of a family member . . .?" was also asked in regard to ". . . a wounded or dead Vietnamese woman or child." These items were gender differentiated initially in the full item pool because it was not empirically known whether gender, or condition of life or death, would have differential effects. The correlation between "living Vietnamese male" and "living Vietnamese woman or child" ($r = .88$) and the correlation between "wounded Vietnamese male" and "wounded Vietnamese woman or child" ($r = .91$) would suggest that the scale could be streamlined to 31 items by rewording the items to state "living Vietnamese person" and "wounded or dead Vietnamese person."

perienced more negative racial experiences[10] than Whites and reported more negative psychological effects from these situations. Of all racial groups, rates of "sadness or depression" and "low self-esteem" resulting from the most "bothersome racial situation" were highest for Asian/Pacific Islanders, and the rate of "stress, anxiety, or fear" was the second highest. Outside the United States, the highest rate of "bothersome racial situations" was experienced by Asian/Pacific Islanders serving in Asia or other Pacific Islands. Thus, the problem of race-related stressors experienced by Asian Americans appear to continue to this day.

The limitations of this study include retrospective assessment of exposure to combat and race-related events. King et al. (1999) described difficulties with recall for events in the distant past and problems with encoding of detail for events occurring during times of extreme stress. As with any retrospective study of trauma, we cannot be certain of the accuracy of reporting of temporally distant stressful experiences. However, it should be noted that test–retest reliability for the RRSS was adequate. In addition, recall for experiencing race-related stressors predicted variance distinct from that accounted for by reports of combat exposure. It is therefore unlikely that the results merely represent a general response bias to endorsing more extreme responses by respondents who have more psychiatric symptoms.

Additional limitations of this study are due to the problems inherent in identifying and recruiting minority samples. Obtaining such "rare case" samples requires extremely labor-intensive methods to find and access eligible participants from among a much larger pool of noneligibles. As a result of the difficulties associated with identifying and recruiting minority samples, this study has some methodological limitations. For example, the representativeness of our sample cannot be fully assessed. We recruited respondents using Department of Defense and VA registries, as well as nominations from Vet Center staff and from study participants. In so doing, we strove to enroll a wide range of Asian American ethnic subgroups from among treatment seekers and nontreatment seekers as well as from a range of military ranks. A result of this mixed sampling design, which combines representative sampling with nonprobability methods, is that we cannot generalize our findings to the entire population of Asian American Vietnam veterans. Similarly, we used a convenience sample drawn from within our larger study sample to conduct our test–retest reliability study because the logistic and sampling problems associated with drawing a new sample of respondents were prohibitive. Finally, our factor-analytic and validation studies were conducted using the same large sample. However, these limitations do not strongly impinge on the primary purpose of this study: to develop and validate an empirical scale to measure exposure to race-related events. The present study was not designed to estimate population prevalence or incidence of exposure to race-related stressors. Research using representative sampling methods would need to be conducted to assess prevalence of PTSD or race-related stressors for the general population of Asian Americans that would be inclusive of all the subgroups within that racial group (e.g., Chinese, Japanese, Korean, or Filipino).

An additional limitation of the cross-sectional study design we used is that causality cannot be established. Although race-related stressors made a substantial contribution in predicting the variance in general psychiatric distress and PTSD symptoms, the directionality of the association is not known. Finally, this study involved a specific ethnic group (Asian Americans) in a specific theater of war. We do not know whether such findings would be applicable to veterans of this same ethnic group who served in wars other than Vietnam or to veterans of other ethnic groups who served in Vietnam or other wars. We also cannot generalize to civilians experiencing race-related stressors in nonmilitary contexts. Despite these limitations, this measurement strategy represents advances in the development of methods to measure exposure to race-related traumatic events in the general population.

Additional steps in scale development are recommended to make the RRSS useful for clinical application. Such steps include direct and systematic replication with other samples of veterans and development of normative scoring criteria or cutoff scores corresponding to low, moderate, and high levels of exposure for interpreting scores. Nevertheless, the findings of this study provide evidence that exposure to race-related stressors should be a part of the trauma exposure history that clinicians obtain from minority military veterans and active duty personnel, and the RRSS can assist the clinician in facilitating a fuller clinical interview. In addition, the findings suggest that specific distressing memories of race-related events may be an important and distinct target of clinical intervention for a proportion of Asian American Vietnam veterans with PTSD.

By increasing understanding of the role that racism plays in the development of psychological distress among minority veterans, the findings of this study may also contribute to enhancing the competency of nonminority mental health service providers in cross-racial clinical situations (Parson, 1990; U.S. Department of Health and Human Services, 1999). Research findings on military and wartime race-related stressors have implications for the future measurement of risk factors for veterans of all racial backgrounds and, more generally, for understanding the psychological effects of stressful race-related experiences of minorities. In multicultural countries, such as the United States, empirical research on exposure to race-related stressors and the development of racially and ethnically specific assessment measures is needed to enhance the quality of empirically derived information on the mental health consequences of racism. Such information is also needed to advance public policy that mitigates the effects of racism and ensures access to equal opportunity (see Scarville et al., 1999). Finally, this study prepares the way for broader studies of exposure to race-related stressors and trauma and future epidemiological research on the relationship between exposure to race-related stressors and mental and physical health.

[10] Negative racial experiences included racially offensive encounters, racial encounters of threat or harm to self involving another Department of Defense member, and more perceived deterrents to their career.

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Appendix

Race-Related Stressor Scale for Asian American Veterans

Please answer the following questions about your experiences while you served in the Vietnam War or served in the military during the Vietnam War. These questions describe events that may have occurred in the field or in base camps or other rear areas. The term "military personnel" refers to American military personnel. The term "in Vietnam" refers to any duty on the ground, in the air over or in the waters contiguous to South or North Vietnam or Cambodia, or in or over Laos. Please *circle the answer* that best describes your experiences. In the military . . .

1. How often, if ever, did you *hear* military personnel describe Asian lives as having no value or lesser value than American lives?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

2. Did you ever *observe* military personnel treat Asians as if their lives were of no value or of lesser value than White American lives?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

3. How often, if ever, could you identify with the people or culture of Vietnam?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

4. How often, if ever, were you concerned that other American soldiers might question your loyalty if you interacted with Vietnamese civilians?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

5. As an American of Asian ancestry, did you ever feel a stronger identification with Vietnamese civilians than with American soldiers of White or Black ancestry?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

6. How often, if ever, did military personnel refer to Asians as "gooks," "slant eyes," "slopes," or some other racially insulting or insensitive name?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

7. Were you ever singled out for different or harsher treatment than persons of another race but of the same rank?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

8. How often, if ever, did you hear military personnel express hatred toward Asians?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

9. Were you ever pointed out as an example of what the enemy looked like?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

Appendix (*continued*)

10. Did other Americans ever keep their physical distance from you or tell you to get away from them because you were Asian?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

11. Did other Americans ever do or say things that led you to believe that they thought you looked like a Vietnamese?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

12. Did you ever observe Asian American military personnel being stared at in ways that non-Asian Americans were not?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

13. How often, if ever, did you feel you were more like the Vietnamese than like the Americans?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

14. Compared to persons of other races but of the same rank, were you ever ignored or treated disrespectfully?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

15. How often, if ever, was your authority questioned for reasons you suspected had to do with your being Asian?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

16. How often, if ever, did military personnel treat Asians as inferior?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

17. How often, if ever, were you called a "gook," "slope," "slant eyes," "Jap," "kamikaze," "Chink," "boy," "pineapple," or "coconut head" in a way that felt hostile or insulting?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

18. Did military personnel ever make racially insensitive remarks about your doing things like eating rice, using chopsticks, or squatting?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

19. Did you ever feel like you "stood out" (in a negative way) or were looked at as if you did not belong there?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

20. Were you ever in situations where you felt isolated because you were the only or one of few Asian Americans in your platoon or other small group?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

21. How often, if ever, did other Americans treat you with racial hatred or hostility?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

22. Were you ever denied access to certain areas or hassled before being given access to certain areas because you were Asian?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

23. Did you ever feel like you did not really fit in with the rest of the Americans in your unit?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

24. How often, if ever, did military personnel make insulting remarks about the South Vietnamese, related to their size, smell, intelligence, diet, or abilities?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

(*Appendix continues*)

Appendix (*continued*)

25. How often, if ever, did a *living* Vietnamese *male* remind you of a family member, relative, or friend?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

26. How often, if ever, did a *living* Vietnamese *woman or child* remind you of a family member, relative, or friend?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

27. How often, if ever, did a *wounded or dead* Vietnamese *male* remind you of a family member, relative, or friend?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

28. How often, if ever, did any *wounded or dead* Vietnamese *woman or child* remind you of a family member, relative, or friend?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

29. Did you ever feel like you had to express anti-Asian sentiments in front of other Americans even if you did not really feel that way?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

30. How often, if ever, did you feel your presence in the military was resented because you were Asian?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

31. How often, if ever, did you feel you were treated unfairly because of your race or ethnicity?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

32. Did other Americans ever treat you like an outsider or a foreigner?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

33. How often, if ever, did you try to prove, or feel the need to prove, that you were American?

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Very Frequently

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